The JOURNAL of GEOGRAPHY

A Monthly Magazine Devoted to the Interests of Teachers of Geography in Elementary, Secondary, and Normal Schools

RAY HUGHES WHITBECK, *Editor*
Of the Department of Geology and Geography of the University of Wisconsin

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The JOURNAL of GEOGRAPHY

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HUMANIZING SCHOOL GEOGRAPHY

By Richard E. Dodge
Washington, Conn.

TEACHERS of geography in Elementary and Secondary schools have an opportunity and a responsibility, as never before, to make their subject vital and interesting and show pupils that it is of great value in helping understand world conditions as they are today and as they will be when the world again becomes normal and the relations between countries and people cease to change almost with the passing hours.

Geography in the past has been too impersonal. When the store or the coal yard were filled to overflowing and one could satisfy all the bodily needs without thinking back of the immediate source of supply, few people could realize that there was any geography in every day life. Most pupils and adults thought of geography as a matter of place only, with perhaps certain interesting incidentals as to scenery, peoples and customs, with less interesting but yet ever present facts of production. Geography was a catch-all of facts, some vital, but mostly merely informational, and most people thought there was nothing worth while in Geography that fitted the mental development of those who had advanced beyond the elementary school.

Man had lost his direct touch, mental or physical, with the land that supported him, and was not directly concerned with the problems of transportation or production. The great horn-of-plenty of Nature in some mysterious but unquestioned way, furnished the necessities of life, when wanted and where wanted. Why be concerned with the autumn weather conditions in North Dakota or Canada, when flour was to be had at every corner grocery?

How different are the conditions now! Everyone knows that the world faces a famine, that the essential food materials must be raised locally as far as possible, and that the loaf of bread produced at home from locally grown grain not only helps solve the personal problem of sustaining life, but is a contribution of no mean significance to the still greater problem of feeding the millions of men and women, soldiers, factory workers and others who are withdrawn from production of foods and other neces-

sities of daily life, and helping in the stupendous problem of making the world safe for humanity and civilization.

Every one today realizes his own direct personal dependence on the earth that sustains him: the weather of the growing season of North Dakota *is* a personal matter to the factory worker in New England; the corn crop of the Middle West *is* of vital interest to the householder that realizes the necessity of saving wheat. The economic relations that have always existed between distant sections of the country or the world are now realized, they are talked about and discussed. Human problems are the interesting problems to all who think and read. Many of these problems, indeed most of the human problems of today, have a geographic foundation. Indeed, they are but phases of human geography.

Here is our opportunity to humanize school geography, to show that a knowledge of geography and especially of the facts and relationships of human geography, gives a key for interpreting and understanding the world relations which seem at first, perhaps, to be a chaos of chance conditions.

Individuals and groups of individuals over all the world, civilized and what we once thought were civilized, are engaged in the same great problem of making a living. Wherever humanity is found, whether in thickly settled cities or sparsely scattered over the vast areas of great plains, people are individually working to make a living. Some localities are practically self dependent. They produce nearly all the essentials of life and have few economic exchanges with other sections. Thus it was in America before the industrial era made possible specialization of labor and gave us cities and towns that were dependent on the country, and rural regions almost equally dependent on perhaps distant markets for at least some of the necessities of every day life.

Today we in America are becoming more self dependent. The backyard gardens and the home knitting, either by hand or machine, are helping make the individual home less dependent on the store or the market. This condition is destined to persist for some time and people for the next few years, by necessity or choice, will endeavor increasingly to become more self sufficient.

Whether dependent or self sufficient, every single home or group of homes is placed in a certain geographic setting. The type and form of houses people live in, their character of work, their clothes and perhaps even their outlook on life reflect the background amid which they live. Surface features,—landscape

and not individual land forms,—form their physical surroundings. The landscape, the soil, the climate, especially of the growing season, the water resources of streams and soil, give individuality to their habitat and determine in large part the form of production they will engage in if they are tillers of the soil. The natural vegetation,—whether grasses, to which most cereals belong, or forests and grass, that furnish food, fuel, materials for construction and tools,—also is a factor of the landscape, a natural resource that influences the form of labor of a given region. The relative location of the area to markets, that is, to sources of demand, perhaps may determine the exact form of production to be followed in a community.

Everywhere people must work to secure the five essential needs of life: food, clothing, shelter, defence, and some form of power. Their daily lives are devoted to making a living, which usually means certain of the necessities and an economic surplus of some form that can be exchanged for necessities or desired products that cannot be economically produced at home.

The economic surplus not needed for home consumption, whether wheat, corn, cotton, shoes, automobile tires or Attar of Roses, is the one thing we usually emphasize in reference to a given area. It is a human item, to be sure, but it may not suggest a real and true picture of the life work of the people producing it, and geography should attempt to create visual images of how a country looks, what the people are doing and why they are doing it.

Corn, for instance, is produced in sufficient quantities to be reported by the Census Bureau in every state of the Union except Nevada. Yet most pupils perhaps get the impression that corn is produced only in the corn surplus states or Corn Belt of the central West. Yet corn fields are a conspicuous feature of the landscape in New England as in Georgia, in sections of Minnesota as in Ohio or Iowa. A real interpretation of what people are doing to make a living would include what is produced for local needs as well as for exchange.

Let us therefore not give undue emphasis to the advertising items, of little significance perhaps, but make our regional study a study of human geography in a broader way. Let us study a given section as a region where people are living as full a life as they can and let us study what they are doing and why.

School geography can be humanized in three distinct ways: by choosing for study those features of a section that help us in-

terpret the life conditions; by studying the necessary items of information as to location, as to physical features, products, etc., as far as we can, so as to bring out their human relations; and by making our class methods a little bit less unhuman than they have been.

Geography in schools must include many items of information, but most of the vital items can be humanized. There is nothing inherently interesting in a mountain as such, but a mountain as a source of necessary constructional materials, as an obect of landscape beauty, or as the home of animals and plants different from those about its base, or as a health or pleasure resort, becomes humanized. There are few capes in the world that pupils need to be able to locate exactly and those few have a human interest. Cape Hatteras, because of the dangers it offers to coastwise shipping, is a human cape; so is the Cape of Good Hope with its associations with stories of the early seekers of water routes to the Orient, or Cape Horn with its human interests furnished by the '49ers who were attracted by the glamour of gold in California. What a difference to the child between learning by memory the location of Cape Horn and thinking of it as a corner post that must be passed against the wind by sailing vessels before the days of steam.

There is nothing inherently interesting in the old, inaccurate definition of a river, in its length, or the states it bounds. But what a difference when it is studied as an artery that holds in one common association of interests, the cities and lands and peoples about it. A river binds and does not divide people. It is, or may be, the flowing road that makes possible interchange of thoughts and products. Everywhere people have roads; they are one of the ever present associations with groups of people. The flowing road gives cheapness and ease of movement and has played and is playing a part in the progress of the world of great human interest.

Again, location of places as a matter of memory is not inherently interesting to most children, but location as studied in its relation to the "strategic points" that have so vitally determined its significance is a thing of interest. It is one thing to learn that Louisville is at the falls of the Ohio, Richmond at the falls of the James, or Buffalo at the lower end of Lake Erie. But it is another very different thing to know these locations as a response to the physical surroundings.

It is an axiom of human geography that wherever there is of necessity a break in the method of transportation along a signifi-

cant route of commerce, there a city will develop. When the necessity of changing the method of transport, as for instance from water to land occurs, the change is usually from a cheaper to a more expensive form of transportation. Hence the necessity of breaking up the bulky raw product that can be economically transported by water into the more concentrated forms with greater value in a given bulk, that can be profitably transported by the more expensive means of movement. This explains in part at least, or gives meaning to the iron furnaces and mills around Buffalo, where the bulky raw iron from the upper Lakes is changed into the more valuable and less bulky pig iron, or the still more valuable structural steel. In the same way, the bulky and readily handled wheat is broken up into its various parts, flour and by-products. The flour may be sent on its way eastward to the seaboard cities for local use or foreign exportation. The by-products, so valuable for cattle food, are sent by different routes to the sections that need them. The trunk line of the Great Lakes is connected at Buffalo with the myriads of water and rail routes that bring the markets near to this great manufacturing city.

Buffalo has other physical conditions that have favored its growth and significance, but perhaps the most "strategic" item in its casual relations is that of position at the lower end of the Lakes where of necessity freight in transit must go ashore.

The same necessity of change in form of transport existed in the early days at Louisville where the up river flat boats gave way to the down river boats the other side of the falls. So at Richmond, at Bangor, Maine, at Chicago, at St. Louis and many other places the same fundamental "cause" operates. Strategic points in geography thus interpreted become short hand generalizations which help in the understanding of the reasons for things in far distant sections of the world. They are principles of human geography as worth while and perhaps more interesting and easily understood than some of the generalizations of physical geography that we do not usually humanize.

Any teacher who has caught the spirit of human geography will humanize her school work. Her pupils will not learn lessons from books. They will study and interpret, so far as their ages and abilities permit, the human conditions in the several great countries of the world. They will find each area interesting because it is the home of people engaged in the great world wide task of living as full a life as possible. Their methods of work, their interests in other peoples, their relative significance

in the economic or political world, are worth studying because we can approach them sympathetically. We can understand similarities of procedure and find "problems" in variations of procedure because they are human responses to varied physical conditions.

Every section furnishes points of attack full of human interest. Problems arise for answer, they do not have to be hatched in a far-fetched way. Any details of life of a given section, any industrial, social or political relationships of a given section to us or to regions we know, becomes an object of study and interest. Here is the real source of "problems" in geography.

The problem method has always been used by the best teachers. It is now coming to its own as a method for more general use. The problem method, when the problems are real and personal to the pupils, is the natural method of procedure, for it provokes real study and thinking, training in the use of source materials, of maps, text and reference volumes.

The problem method is not, however, a panacea for all weaknesses of teaching. A series of memory exercises on location, surface features, climate, products, etc., is not a problem even if the chapter heading ends with a question mark. Neither are problems vital to pupils when a unit problem is too big and inclusive for definiteness or exactness, or when it is an adult made query beyond the sympathetic understanding of the pupils. Problems, to be worth while, must be personal to the pupils and so far as possible suggested by them.

The problems of geography are human problems, for geography is a humanity as it is a science. It is one of the human sciences. Let us give it flesh and blood, vitalize it in content and method, and make it a contributing force in the education of children, especially now when we are training the aroused youths who must in a few years take their part in solving the great world problems that no one can now foresee in detail.

The teacher with an interest in folks as well as things, trained in geography, of which the highest aspect is human geography—and commercial geography is but one phase of human geography, though it may be as devitalized as are the earth motions—has an opportunity and a responsibility far beyond any given to her predecessors of the craft. This is a time when human interests are dominant. Geography can be humanized as never before because people are calling for its wares, if of human worth. Let us catch the spirit of the times and be human teachers of one of the most vital of human subjects—geography.

A GEOGRAPHER'S GEOGRAPHY LESSON ON THE PRAIRIES

By Albert Perry Brigham
Colgate University, Hamilton, N. Y.

TO THE deep satisfaction of the writer, a share was given him in the work of the Nebraska geographers at the State Teachers Association held in Omaha on the eighth, ninth and tenth of November. Addresses were given before the Nebraska branch of the National Council, and before the sections of Commerce, Geography and Literature. The Council commanded a large attendance at an early hour in the parlors of Hotel Rome, where thoroughly matured reports were offered by Professor Rose B. Clark on Geography in the Elementary School; by Professor Jeannette C. Nelson on Geography in the Junior High School; and by Professor A. J. Mercer on Geography in the High School. The Geography section, under the presidency of Professor N. A. Bengtson, was adjourned from a small room to a large hall to make room for the hundreds that sought attendance. The work of this section will be directed during the coming year by Superintendent W. T. Davis of the McCook schools. An informal dinner at Hotel Castle on Thursday evening brought together a select group of workers, and was given to discussion, especially of the baffling but vital problem of geography in the high school.

The value of emphasis on mature geography in the higher schools is well to be seen in this State. The Department of Geography in the University of Nebraska, through Dr. Condra, its head, and Professor Bengtson and others associated with them, wields a vital power in all school work in the subject. The value of geographic study is also brought home to the people through an unusual correlation with the department, of several practical activities. Thus Dr. Condra is director of the Soil Survey, in cooperation with the United States Bureau of Soils. Closely related are also the State Conservation and Welfare Commission, the State Highway Commission, the investigation of road materials and the new development of the potash industry. A useful item of conservation work has been the preparation of 40,000 feet of film illustrating the principal industries and regions of Nebraska. These films have been widely shown in and out of the state and are everywhere available to the geography teachers.

The excuse for overstepping the Mississippi and the Missouri was a call to give help in geography. In attempting so to

do far more was gained than was given. Through the courtesy of friends some hundreds of miles of country road and of farms were seen about Omaha, near Lincoln, and in the parts of Iowa northward from Des Moines. Some geography can be learned from books and teachers, but more can be gotten, and irrevokably, from the soil and the surface. The writer thought he knew somewhat about the prairies and had even ventured a small way into print, but it was mainly from car window and book. But when there are five, or ten, or twelve feet of black earth under the foot and when the eye rests on yellow fields of corn all the way to the horizon, the prairie gathers solidity in the consciousness. One sees why the "poor white trash" is so rare as to be the exception, proving the proud dictum of the prairie dweller,—of such "we have none." Land at $200, or $250 per acre will not let poor people live on it. The geographer does not intend to get into trouble here by delving into precise reasons—enough that in the heart of the prairies it is true.

The memory dimly recalls relatives who migrated after the Civil War from western New York to western Iowa. What would be their fortunes in that remote region, when Iowa was perhaps twenty years from the beginning of its statehood? Today the shack has given way to the mansion, and the windbreaks, grown tall, give the aspect of little woodlots surrounding the homes. Palace cars run from Sioux City to Des Moines and St. Louis, and from Omaha to Chicago, Denver and the Pacific Coast. And the corn field and the steer, the village elevator and the railroad, the packing house and the telegraph, point the way from the prairie to all lands. Thus home geography amplifies into world geography.

Here in the North Central prairie is an adjustment of man to the earth. Out of it we can pick some geographic bits. Iowa might raise and once did raise much wheat. Wheat as a frontier crop has moved on to the northwest, and wheat as an intensive crop yields the farmer less than corn, steer and hog. An eastern breeder of fancy milkers told an audience of Iowa farmers that they might create a great dairy state. But the Iowa farmer, taught by his agricultural schools, by tons of farm periodicals and by his experience, knows that he might, but that he will not, for the present adjustment puts more money into his pocket than the dairy alternative could promise. He does not buy costly sires from the east, but "feeders," gathered from the plains at Omaha. If you ask him how many he has, he answers, one, two, or more "carloads." He can buy or sell better in multiples of twenty, because he keeps harmony with shipping requirements,

and thus he weaves an added small mesh in the geographic net. He feeds the steers a year, more or less, from his pastures and corn cribs, and they move on eastward. The teacher can put these things together—herds on the great plains, Omaha, packing houses, feeders, Iowa black soil, corn, alfalfa, the Chicago packing house, New York, Liverpool,—local geography—world geography!

Not only soil and corn, but the climate, makes it easier to fatten steers than in the East. The corn stalks, freed by the husker, but still standing, are broused by the cattle to late autumn or early winter. There is not too much snow and less housing is required than in the snowbound East. The overhanging straw stack and the lee of barns and windbreaks will serve for shelter save when the blizzard is abroad. And the swine, nicely adjusted to the number of cattle on the individual farm, live from what the steer leaves on the ground or in the manure heap. Nor may we forget the economy of having eighty acres of corn in one field or tilling those eighty acres by advanced types of machinery. Compare the eastern cornfield, the silo, the cutting, shocking, husking, piling and drawing of dry corn, with the husker and the wagon and the seventy or hundred bushels per day of one man and one team on the prairie.

In the East, the traveller finds trunk lines of highway along which his motor car may securely move, but he swings at his peril into the byways and hill roads of New York or New England. On the prairie however nearly every road is safely open. The subsoil is readily turnpiked by powerful road machines, gravel is drawn on and a good road soon develops, and in the drier climate is relatively permanent. Such conditions aid in putting a "flivver"—Ford car—on almost every farm, and in a certain prairie county, no doubt in nearly all, every resident could travel at the same moment in the county's outfit of automobiles. This condition, plus the telephone, destroys distance and makes large areas of farm homes into closeknit communities. The farmer's family like the farmer himself, changes its horizon in the late hours of the afternoon, when the day's work is done and the horses are at rest. Thus geographic conditions before we know it land us in the field of sociology and we retrace our steps lest we meet the scoffer with his quest for a definition of geography.

The prairie, from Chicago to central Nebraska, reveals almost no waste land. This statement becomes more nearly exact each year, through the vast amount of tiling by which the low

places and bogs are undergoing reclamation. Field after field was pointed out with the remark—here, five or ten years ago was a lake.

The amount of surface relief, and the variety of it, are not well known, and our books do not adequately describe it. We content ourselves with references to the valleys cut by dissecting agencies below the plain and by noting those glacial thickenings which lie above it. This easy way however gives no knowledge of the heavily rolling surfaces of the deeply dissected drift sheets of southwestern Iowa and eastern Nebraska, and fails wholly to mark those endless gentle swells and descents which relieve the landscape of monotony and make it quite unsafe to take the Red River bottoms or the High Plains as types of surface in the North Central region.

Why does Iowa, older and greater in population, remain essentially a rural state while Nebraska develops a large city on the banks of its greatest river? It may be objected that Iowa with its more numerous cities outnumbers in urban population its western neighbor. The fact remains that Iowa has not, and seems not likely to have, a city of the first order of population. Council Bluffs, like Omaha, is on the Missouri River and is older than Omaha, but Council Bluffs is perhaps on the wrong side of its state for great growth, though conditions at Kansas City throw doubt on this conclusion. At all events Omaha, the Nebraska terminal of the Union Pacific Railway, was thus destined nearly a half century ago, to be the great city of Nebraska, the gathering station and point of departure of its vast products.

On the east it would seem that the twin cities in the north, St. Louis in the south, and Chicago on the shore of Lake Michigan, eliminated any hope that Iowa might have a great city on the Mississippi River. It may be quite to the weal of a rich state to be without a great city. The problems of city growth, thus hinted at but in no degree solved, might well claim intensive study from some North Central geographer.

IMPORTANT NOTICE

The Association of American Geographers has decided to omit its annual meeting which was scheduled to be held at the University of Chicago, Dec. 27-29. The annual meeting of the National Council of Geography Teachers which was to be held in connection with that meeting will also be omitted; this action by the National Council seems advisable, as it is believed that comparatively few of the members would feel justified in incurring the expense of a trip to Chicago for a one day's meeting.

SUGGESTIONS FOR TEACHING ELEMENTARY GEOGRAPHY

By R. H. WHITBECK
University of Wisconsin, Madison

(Concluded from December)

THE "WHY" PHASE OF GEOGRAPHY

IN THE recent past we have heard, and we now hear urgent pleas for greater stress upon the causal idea in geography. It is a fact that cause and consequence are the keynote of modern scientific geography. No one would willingly return to the old purely memoriter type of instruction. All teachers are agreed that, to the fullest extent consistent with the pupils' abilities, the causal notion should be introduced into geography. But we must not overlook the important qualification, "so far as consistent with the pupil's abilities." Children in the fifth and sixth grades can reason on simple matters which come within their experience and knowledge; but that experience is usually very limited and that knowledge very immature. But the teaching of causes and consequences in elementary geography does not mean that the pupils reason out for themselves all of the causes and consequences. Many of them are taught to the pupils just as other facts are: for example, we teach the pupil that New York has an excellent harbor, and we also teach him that the cause of this deep, enclosed bay is found in the sinking of the land which drowned the mouth of the Hudson River. We teach the "why" of many things which pupils could not reason out for themselves.

A well developed plan for the work of any grade will include a definite list of "whys" which the teacher proposes to discuss in the course of the year. Some of these may be the following:

1. Why does the wind blow?
2. Why do clouds form? Why do they disappear?
3. Why does it rain?
4. Why do we have day and night?
5. Why do we have seasons? (simple explanation only)
6. Why are there rivers?
7. Why is the land mantled with soil?
8. Why are there hills and mountains?
9. Why are there continents and oceans?
10. Why do things cling to the earth?
11. Why do the moon and sun seem to rise and set?
12. Why does each shine?

13. Why is winter colder than summer?
14. Why is night colder than day?
15. Why does water run down hill?
16. Why is the ocean salt?
17. Why does the ocean not increase in depth since hundreds of rivers flow into it?
18. Why does the moon change from "new" to "full" and then back to "new" again?
19. Why are our summer days long and our winter days short?
20. Why does it snow in winter but not in summer?

Then a group of "whys" in social geography:

1. Why are people engaged in such a great variety of occupations?
2. Why do we build houses? roads? railroads?
3. Why does a city have policemen? a fire department? sewers? paved streets? street cars? city water? a postal system? telephone system? schools? Do all cities have these?
4. Why do so many people live in cities instead of in the country?
5. Why do we have painters, carpenters, tailors, when we might learn to do our own painting, and to make our own clothing?
6. Why do we have stores and markets? Why so many kinds of stores?
7. Why do not all people raise their own vegetables, fruit, grain, and other kinds of food instead of buying them?
8. Why do we have laws and courts, and why may not anyone do whatever he wishes?
9. Why are children in the United States compelled to attend school? (even though parents may not wish it.)
10. Why do we divide states into counties, and counties into townships, and cities into wards?

Drill and Reviews

The great majority of the facts which find a place in text books are not intended to be remembered permanently. They are learned for the time being, but soon only a hazy memory of them remains. It does not follow, however, that the effort made to learn these facts is wasted. The geographical facts which one learns, but afterwards forgets, give a basis for intelligent thinking and judging in regard to things geographical—a kind of ge-

ographical intelligence—and this is an essential part of an education.

But there is another and much smaller group of geographical facts which people find a decided advantage in remembering. No two people would agree upon the exact make-up of this group of facts, and no teacher could make a list to which he would permanently adhere; yet, we all believe that there must be a body of geographical knowledge which people would profit by having fixed in mind so firmly that it becomes a permanent possession. From the teacher's standpoint the first-mentioned large group of facts and relations belongs to the category of things that are *to have been known;* the latter small group consists of things that are *to be known.* No one can draw the exact boundary between the two groups, yet the recognition that two such groups exist and ought to be differentiated will result in a better distribution of emphasis and hence better teaching. The first-mentioned larger group of geographical facts does not call for drill or careful review, but the small body of fundamental knowledge which is to be taught so that it sticks must be drilled and reviewed. Any theory of education which taboos drill is a very foolish theory and happily almost everybody knows that it is foolish. One of our problems, then, is the judicious selecting of these facts which we propose to review from time to time.

This plan calls for means which shall facilitate drill and review. Unless some means are devised whereby this selected list of facts can be conveniently brought into use for review, we shall find ourselves omitting the review, and then the plan will have failed. In short, a group of items which we desire to review more or less frequently must be (1) put into definite, usable form; and (2) it must be conveniently at hand so that without waste of time it can be brought into use. The most successful devices for this purpose that I am familiar with are the following:

Review Devices

Decide upon the lists of cities, rivers, islands, mountains, and other features which you desire to review from time to time; secure two or three or more buff-colored window shades mounted on spring rollers; draw light pencil lines about two inches apart across the shades from left to right; divide the shades by vertical lines into three or four columns. With a small camel's hair brush, such as you use for water-color work, and with dead black ink print the lists of cities, rivers, etc., in columns on the shades. The shade on its spring roller is mounted with ordinary fixtures above

the black board, or in any convenient place where it can be pulled down at a second's notice.

This method of review may consist in,—

(1) the pupil's stating merely in what country the city is located;
(2) locating starred (*) cities more definitely;
(3) giving one fact (or more) of interest about each city;
(4) selecting a few cities and discovering how many facts about each the pupils can supply.

A list of important commercial products may be prepared in the same way, and pupils called upon to name one country, two countries, or three countries from which we buy these commodities in large quantities. Such a list would include:

sugar	olives	woolen suitings
coffee	figs	fine cottons
tea	dyes	silk goods
cocoa	toys	wines
raw silk	tin	linen
wool	spices	diamonds
cotton	rice	bananas
dates	olive oil	rubber

A list which always arouses interest is a "What and Where" list. The pupil is required to know whether a certain word is the name of a city, a river, a lake, or something else, and then to tell where it is.

The second of the devices for definite and convenient review requires a package of cards about 2¼ x 4 inches, or any other convenient size. As the daily work of the geography class progresses, the teacher selects from each lesson a few really significant questions which ought to be reviewed later and writes these upon the cards. These are always at hand ready for review and the teacher is sure that important points that have been taken up will not be lost sight of in the progress of the work.

A variation of this device constitutes a profitable classroom game. The teacher has a package of cards upon which are questions that can be answered in a word or two. On some part of the blackboard that can be spared, the names of the members of the class are written and left from week to week. When the geographical game is to be played, a pupil is appointed clerk and takes his place by the list of names at the board. From her cards the teacher reads a question and the first pupil who answers it is credited with one point by the clerk at the board. A five-minute

drill of this sort once or twice a week is thoroughly profitable. The following questions may serve as types:

It will be observed that the device requires questions which can be answered in a word or two. Each square here represents a card.

Foremost seaport of the United States? Largest country of South America? Capital of Russia? Form of government in France?	River of Scotland famed for its ship-building yards? Cape at the southern extremity of South America? Largest city in New England?	Most valuable crop raised in the United States? Seat of government of Canada? Mountains between France and Spain? Area of the U. S. (in round numbers)?
River—outlet of the Great Lakes? Strait between Alaska and Asia? Principal river of Germany?	City at western end of Erie Canal? Capital city of China? Chief iron-ore producing state of the United States?	Most populous state of the Union? Largest island of the West Indies? River upon which London is situated?
River between Texas and Mexico? City near the junction of the Mississippi and Missouri Rivers? Leading French port on the Mediterranean?	Greatest railway center in the world? Distance from New York to Liverpool (in round numbers)? Southermost city in the United States?	Leading city of South America? Largest of the continents? Foremost manufacturing city of the United States?

Tests and Examinations

In spite of the occasional attacks made upon examinations, they are used in practically every school, college, and university. They are an essential and a highly valuable part of the intellectual discipline of the school, though no one defends using the results of an examination as the sole basis of promotion. The nervous strain which may well be objected to in the case of certain high-strung children is seldom serious in grade school examinations, though it often is in more advanced classes where the examination is long, difficult, and highly important. The greatest benefit of the written examination to pupils is achieved before the examination occurs—namely in preparing for it. The second greatest benefit is to the teacher in revealing to her how well or how poorly she has taught.

One of the most beneficial examinations that I ever took was conducted thus: the teacher had prepared with much care thirty-

five very comprehensive questions. He gave these questions to the class a week in advance of the examination saying, "I shall select my examination questions from this list; if you can prepare to answer these thirty-five questions perfectly, you can get 100 in your final examinations." We were delighted; now we could review the term's work with full confidence that every effort we made was directed straight at the questions which were to appear in the examination. The definiteness of the task made it attractive, and we went at it with zest and confidence. We found that the questions covered thoroughly the essentials of the whole term's work; the teacher knew what he was doing, and his class got nearly as much good out of that week's intensive study, as it got out of the preceding twelve weeks of desultory work. I have frequently employed the method and always with satisfaction; providing, of course, that care and good judgment were exercised in preparing the questions.

PRUSSIANIZED GERMANY*

I SPEAK as one who has seen the spirit of the Prussian governing class at work from close by, having at its disposal and using to the full practically every agency for moulding the public mind.

I have watched it proceed with relentless persistency and profound cunning to instill into the nation the demoniacal obsession of power-worship and world-dominion, to modify and pervert the mentality—indeed the very fibre and moral substance—of the German people, a people which until misled, corrupted and systematically poisoned by the Prussian ruling caste, was and deserved to be an honored, valued and welcome member of the family of nations.

I have hated and loathed that spirit ever since it came within my ken many years ago; hated it all the more as I saw it ruthlessly pulling down a thing which was dear to me—the old Germany to which I was linked by ties of blood, by fond memories and cherished sentiments.

The difference in the degree of guilt as between the German people and their Prussian or Prussianized rulers and leaders for the monstrous crime of this war and the atrocious barbarism of its conduct is the difference between the man who, acting under the influence of a poisonous drug, runs amuck in mad frenzy

*From an address by Mr. Otto H. Kahn of New York before the Harrisburg, Pa., Chamber of Commerce, September 26, 1917. Reprinted by permission.

and the unspeakable malefactor who administered that drug, well knowing and fully intending the ghastly consequences which were bound to follow.

THE world fervently longs for peace. But there can be no peace answering to the true meaning of the word—no peace permitting the nations of the earth, great and small, to walk unarmed and unafraid—until the teaching and the leadership of the apostles of an outlaw creed shall have become discredited and hateful in the sight of the German people; until that people shall have awakened to a consciousness of the unfathomable guilt of those whom they have followed into calamity and shame; until a mood of penitence and of a decent respect for the opinions of mankind shall have supplanted the sway of what President Wilson has so trenchantly termed "truculence and treachery."

God strengthen the conscience and the understanding, the will and the power of the German people so that they may find the only road which will give to the world an early peace and in time lead Germany back into the family of nations from which it is now an outcast.

From each successive visit to Germany for twenty-five years I came away more appalled by the sinister transmutation Prussianism had wrought amongst the people and by the portentous menace I recognized in it for the entire world.

It had given to Germany unparalleled prosperity, beneficent and advanced social legislation, and not a few other things of value, but it had taken in payment the soul of the race. It had made a "devil's bargain."

AND when this war broke out in Europe I knew that the issue had been joined between the powers of brutal might and insensate ambition on the one side and the forces of humanity and liberty on the other; between darkness and light.

Many there were at that time—and amongst them men for whose character I had high respect and whose motives were beyond any possible suspicion—who saw their own and America's duty in strict neutrality, mentally and actually, but personally I believed from the beginning of the war, whether we liked all the elements of the Allies combination or not—and I certainly did not like the Russia of the Czars—that the cause of the Allies was America's cause.

I believed that this was no ordinary war between peoples for a question of national interest, or even national honor, but a conflict between fundamental principles and ideas; and so believing I was bound to feel that the natural lines of race, blood and kin-

ship could not be the determining lines for one's attitude and alignment, but that each man, regardless of his origin, had to decide according to his judgement and conscience on which side was the right and on which was the wrong and take his stand accordingly, whatever the wrench and anguish of the decision. And thus I took my stand three years ago.

BUT whatever one's views and feelings, whatever the country of one's birth or kin, only one course was left for all those claiming the privilege of American citizenship when after infinite forbearance the President decided that our honor and safety demanded that we take up arms against the Imperial German Government, and by action of Congress the cause and the fight against the Government were declared our cause and our fight.

The duty of loyal allegiance and faithful service to his country, even unto death, rests, of course, upon every American. But, if it be possible to speak of a comparative degree concerning what is the highest as it is the most elementary attribute of citizenship, that duty may almost be said to rest with an even more solemn and compelling obligation upon Americans of foreign origin than upon native Americans.

For we Americans of foreign antecedents are here not by the accidental right of birth, but by our own free choice for better or for worse.

We are your fellow citizens because you accepted our oath of allegiance as given in good faith, and because you have opened to us in generous trust the portals of American opportunity and freedom, and have admitted us to membership in the family of Americans, giving us equal rights in the great inheritance which has been created by the blood and the toil of your ancestors, asking nothing from us in return but decent citizenship and adherence to those ideals and principals which are symbolized by the glorious flag of America.

Woe to the foreign-born American who betrays the splendid trust which you have reposed in him!

Woe to him who considers his American citizenship merely as a convenient garment to be worn in fair weather but to be exchanged for another one in time of storm and stress!

Woe to the German-American, so-called, who, in this sacred war for a cause as high as any for which ever people took up arms, does not feel a solemn urge, does not show an eager determination to be in the very fore-front of the struggle; does not prove a patriotic jealousy, in thought, in action and in speech to rival and to outdo his native-born fellow citizen in devotion and

in willing sacrifice for the country of his choice and adoption and sworn allegiance, and of their common affection and pride.

AS Washington led Americans of British blood to fight against Great Britain, as Lincoln called upon Americans of the North to fight their very brothers of the South, so Americans of German descent are now summoned to join in our country's righteous struggle against a people of their own blood, which, under the evil spell of a dreadful obsession, and, Heaven knows, through no fault of ours, has made itself the enemy of this peace-loving Nation, as it is the enemy of peace and right and freedom throughout the world.

To gain America's independence, to defeat oppression and tyranny, was indeed to gain a great cause.

To preserve the Union, to eradicate slavery, was perhaps a greater still.

To defend the very foundations of liberty and humanity, the very groundwork of fair dealing between nations, the very basis of peaceable living together among the peoples of the earth against the fierce and brutal onslaught of ruthless, lawless, faithless might; to spend the lives and the fortunes of this generation so that our descendants may be freed from the dreadful calamity of war and the fear of war, so that the energies and billions of treasure now devoted to plans and instruments of destruction may be given henceforth to fruitful works of peace and progress and to the betterment of the conditions of the people—that is the highest cause for which any people ever unsheathed its sword.

He who shirks the full measure of his duty and allegiance in that noblest of causes, be he German-American, Irish-American, or any other hyphenated American, be he I. W. W. or Socialist or whatever the appellation, does not deserve to stand amongst Americans or, indeed, amongst free men anywhere.

He who, secretly or overtly, tries to thwart the declared will and aim of the Nation in this holy war is a traitor, and a traitor's fate should be his.

TEACHING OF HISTORY AND GEOGRAPHY

Gideon Thayer, Principal of Chauncey Hall School, Boston, wrote in the American Journal of Education, in 1860: *"There is not, perhaps, in the whole range of studies introduced into our schools, one so suggestive as that of Geography.....I would further maintain that Geography and History should not be separated but be always studied and taught together."*

THE IMPORTANCE OF GEOGRAPHIC FACTORS IN THE BIRMINGHAM, ALA., IRON DISTRICT

By Charles W. Cook
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Introduction

THE rise of the Birmingham district in the iron and steel industry calls attention to the importance of the geographic factors in determining the value of an ore deposit. These include the character of surface features and of drainage and the location of raw materials with reference to each other and to markets. When the unfavorable location of Birmingham with respect to a large market, and the relatively low tenor of the ores as compared with those of the Lake Superior region, which furthermore has the benefit of water transportation, are considered, it is immediately apparent that the Birmingham district must possess some very favorable factors to offset these serious disadvantages.

It is the purpose of this paper to summarize those facts about the Birmingham district which have received treatment in various articles and also to contribute some information concerning factors which have not been discussed in print. In order that the conditions may be more clearly understood, a brief outline of the geologic and physiographic conditions of the district is presented.

Geologic and Physiographic Conditions

The iron ore minerals which are employed in the production of iron and steel in the Birmingham district are hematite and limonite, the deposits of the former being the more important of the two and the ones which have been more largely involved in the growth of the industry. The city of Birmingham, from which the district takes its name, lies a little north of the center of the state of Alabama in the middle portion of the Birmingham Valley, which extends northeast and southwest for a distance of about 35 miles from the city of Birmingham. The district includes not only the Birmingham Valley but also small areas on each side of the valley, giving a total area of about 700 square miles. Birmingham Valley, which is at the southern end of the Appalachian Mountains, is bounded on the southeast by Shades Mt. and on the northwest by Sand Mt., toward the southern end of the valley called Rock Mt. Within the valley are a number of minor ridges having the same general trend as the valley. Of

these ridges the most important is Red Mt., on the east side of the valley. It carries the principal hematite ore bodies being worked at the present time, the most productive portion extending from north of Birmingham to south of Bessemer, a distance of about 25 miles. The general altitude of the valley floor is between 500 and 600 feet above sea-level, being 630 feet at the Louisville and Nashville Railroad station in Birmingham, while the ridges range from 700 to over 1,300 feet in elevation. With respect to the general region, the Birmingham Valley acts as a watershed, the streams flowing east and west having cut gaps in the ridges bounding the valley. Thus it is evident that the Birmingham Valley is both a drainage basin and a watershed.*

The Effects of the Geographic Factors

As indicated above, the Birmingham valley is both a drainage basin and a watershed. The gaps through the ridges which bound the valley therefore give ready access to Birmingham from the outside world, and a down-grade haul to the sea coast. This

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*Geological Note.—The geological section of the district consists of a series of limestones, shales and sandstones ranging in age from Cambrian to Pennsylvanian and exhibiting no pronounced unconformities. These sediments have been folded into a great anticline trending northeast and southwest and have been subjected to considerable faulting, in some instances bringing the oldest formations into contact with the youngest, as along the west side of the valley, where in the vicinity of Birmingham many or all of the intervening formations have been cut out.

The Birmingham Valley has been eroded in the crest of the anticline so that the rocks dip away from the valley to the northwest and southeast, and outcrop in the bottom and along the sides of the valley. The dip of the beds tends to decrease rather rapidly, especially to the northwest, at a short distance from the valley. The lower members are of Cambrian and Ordivician age and are made up principally of limestones and dolomites. These beds outcrop mainly in the bottom of the valley and along the lower slopes. Above this great thickness of limestones and dolomites and outcropping along the west side and near the crest of Red Mt., as well as along the west side of the valley, except where cut out by faulting, is the Rockwood (Clinton) formation of Silurian age. This formation carries the hematite ore beds and is composed of lenses of sandstone and shale, together with four prominent seams of ore, not all of which are workable at any one point. Above the ore-bearing formation is a thin black shale of Devonian age and above that a series of chert, sandstone, limestone, and shale formations of Mississippian age, only the lower member (Ft. Payne) of which is of economic importance, it being quarried and used for road material. Above the Mississippian rocks and outcropping near the crest of the mountains on either side of the valley is the Pottsville group of Pennsylvanian age. This group carries the coal bearing beds of the district. The Warrior coal field which extends westward from the Birmingham Valley has an area of over 7,000 square miles and supplies excellent grade of coking coal. On the east side of the valley lies the Cahaba coal field with an area of 150 square miles. Although the coals from the Cahaba field are also coking coals, they are not as satisfactory for that purpose as the Warrior coals and so are not used in the production of coke. They are however superior to the Warrior coals for domestic purposes.

has probably been an important factor in locating the city of Birmingham.

The combined effect of the folding and erosion of the rocks of the district has been to expose at the surface deposits of all of the raw materials required for the production of pig iron. These materials may be found within a radius of not over three miles, although the haul to the furnace is generally more than this on account of the location of specific properties. The dolomite which is used most largely for the flux is found in the bottom of the valley, with the hematite ore and the fuel higher up on the slope, on opposite sides of the valley. This combination of geologic occurrence and topographic position has resulted in easy and cheap mining and short transportation for the raw materials.

Furthermore, there is a tendency to locate the blast furnaces in the valley near the supply of flux and where advantage may be taken of the down-grade haul for the fuel and ore, especially the latter. It is evident that gravity aids in the solution of the transportation problem, beginning with the raw materials at the mines and ending with the delivery of the finished product at the sea-board.

The variation in the nature of the impurities in the hematite ores of the district results in a rather wide range in tenor of ore which may be mined at a profit. The minimum tenor which is permissible under ordinary conditions of market, etc. may be given as 27—40% iron, which on a percentage basis makes these ores much lower grade than the marginal ores of the Lake Superior region. In the Birmingham district, where the ores have to be transported but a short distance, the effect of this difference in tenor is more apparent than real as the workable ores with a tenor approaching the lower value given above carry lime as their most prominent impurity. Since this substance must be added to the higher grade ores in smelting them, the iron content per ton of blast furnace charge often approaches that of the higher grade Lake Superior ores. However, when the ores carry silica as the chief impurity and it is necessary to add a flux in reducing them, the marginal tenor then approaches the maximum value given above.

Ores which carry as an impurity a sufficient amount of lime to flux them are known as self-fluxing ores. Many of the Birmingham ores are not only self-fluxing but carry excess of lime. It is in connection with such hematite ores that the limonite or "brown ore" deposits which occur in the southern portion of the valley have played a part in the development of the district. The

limonite deposits within the district, although they do not supply the entire production of this type of ore which is smelted there, are located in the southern portion of the Birmingham Valley in the vicinity of Woodstock. The limonite occurs here as irregular deposits or pockets in the clays and for the most part associated with the Coosa and Knox formations (of Cambrian and Cambro-Ordovician age). These deposits are very irregular in form and variable in dimensions so that they would scarcely be suitable as a basis for the establishment of a large iron and steel industry. Their high iron content, especially after concentration, makes them valuable in the smelting of the hematite or of "red ores" carrying an excess of flux. Furthermore they carry an appreciable amount of manganese and so improve the quality of the pig iron for certain purposes.

It seems quite probable, therefore, that not only have the limonite ores in this way improved the value of the hematite ores but also that the presence of the hematite ores has increased the value of the limonite ores by furnishing a more substantial basis for the erection of blast furnaces of large capacity.

In the note on the geology of the district it was pointed out that the older formations which lie in the bottom of the valley and on the lower slopes of the ridges are composed of limestones and dolomities. Up to the present time the Ketona member of the Knox dolomite has furnished most of the fluxing material as the dolomite is more satisfactory as a flux than the limestones of the district. The smelting industry in the district seems now to be approaching a transition point when the limestone will supplant the dolomite for this purpose, as indicated in the following paragraph.

One of the problems which confronts the blast furnace operator is the disposal of the slag. So long as land is cheap the problem is not a serious one but when land becomes dear then relief of some sort sooner or later is necessary. In the Birmingham district a considerable amount of slag has been disposed of for road material, etc., but this outlet is not sufficient to keep pace with the slag production of a growing iron industry. Therefore some other means of disposal must be sought. The manufacture of cement has offered such a possibility, in fact, it offers a possibility of turning a former loss into a profit. However, the dolomite slag is not satisfactory for the manufacture of cement on account of the high magnesia content, and so the use of limestone intead of dolomite as a flux has already been initiated in order that the slag may be used in the manufacture of cement. This is an excellent illustration of the possibilities for adaptation to new conditions which the district possesses.

That the factors discussed above have had a real and important bearing upon the net value of the hematite deposits of the Birmingham district is plainly apparent when it is considered that the price per ton of ore at the mine in 1914, before the war had exerted a decided effect upon prices, was $1.21 as compared to $1.74 for Minnesota and $2.19 for Michigan, while for 1913 the discrepancy was even greater, the values being; Alabama, $1.18; Michigan, $2.64; and Minnesota, $2.21. (United States Geological Survey.)

The mineral resources of the district which have thus far been discussed by no means limit its possibilities. Many promising prospects of other mineral deposits have been located within relatively short distances of Birmingham, such as talc, marble, graphite, etc. Prospects for oil and gas are considered sufficiently good to warrant a number of large companies in undertaking careful explorations. The discovery of oil and gas would be a decided benefit to the iron and steel industry, especially in connection with the manufacture of cement.

MEASURING THE ABILITY OF CHILDREN IN GEOGRAPHY

By E. E. Lackey
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The Need of a Measuring Stick

THE ability of children in geography has been measured in the past, to be sure, but always in terms of subjective standards that vary with teachers and schools. The results of such measurements can have little value in co-operative schemes for improving geography instruction. For this purpose an objective measuring stick is needed whereby the ability of children in geography may be measured and expressed in units that mean the same thing to everybody, thus affording a common basis for comparison and co-operation. The "Hahn-Lackey Scale for Measuring the Ability of Children in Geography" is such an objective scale. Its use will be detailed later, but a study of the scale itself will first be given.

Selection of Questions and Exercises

With six of the modern textbook series at hand, separate lists of questions and exercises were made out covering all phases of geography work treated in these books. In all there were

about six hundred of these questions and exercises. It was constantly kept in mind in the selection that the rational or thought side of geography deserves at least as much attention as the memory phase. It was found that many of the questions and exercises in the original lists could be eliminated. Some were considered ambiguous, some were duplicated in other lists, some were near duplicates and some were relatively unimportant. Many of the exercises had to be revised because of language difficulties. Some were made shorter, some were rid of technical terms in order to simplify them, while others were retaind because they tested knowledge of geographical terms. When the culling and refining process was completed many of the original questions and exercises had been eliminated.

Constructing the Scale

For convenience in giving the tests and in order not to weary the children, the remaining questions and exercises were divided into nine lists of about twenty-five each. These lists were given as tests to the children in twelve Nebraska and Iowa schools at the close of the school year. One thousand six hundred ninety-six pupils took these tests, distributed among the fourth, fifth, sixth, seventh, and eighth grades. The answer papers were read and scored by the authors—about 283,100 answers in all. The judging of the difficulty of each of these questions and exercises was left entirely to the children. On the basis of these answers the questions and exercises were grouped into twenty-five graded lists, ranging consecutively from the most difficult to the least difficult. The letters of the alphabet, in their ordinary sequence, were used to designate these lists, the most difficult being called "Step A" and the least difficult "Step Y". The answers, consequently, placed the questions and exercises in their proper relationship to each other as to comparative diffculty. To make the questions and answers in each step equal in difficulty only such ones as were given approximately the same value by the same school grades were placed in the same step. To be exact, in no case does the absolute value of a question or exercise deviate from the approximate by more than four-tenths of a step, and this only in a very few cases. Expressed in per cent, this means that the given value, say in "Step P", 73 represents values from 70.2 to 75.4; 58 represents values from 54.8 to 61.2; 50 represents values from 46.8 to 53.2; and 34 represents values from 31.2 to 37.2. The difference between consecutive steps is also approximately equal.

Range of Subject-matter Covered by the Tests

The 216 questions and exercises in the scale involve the materials of geography in approximately the following proportions: home geography, thirty-eight; mathematical, twenty-six; locative, seventy-four; human, eighty-eight; principles, one hundred thirteen; physical, ninety-four; climate, seventy-two; historical, eight; commercial, thirty-four; industrial and economic, eighty; state, five; North America, eighty-one; South America, nineteen; Europe, twenty-six; Asia, twenty-six; Africa, fourteen; Australia, seven; comparative, twenty-nine. Other classifications would show an increased variety; e. g., observational, descriptive, representative, plant, and animal geography, and would yield a large number of questions and exercises in each list. However, this scale in no sense should be taken to represent a complete list of minimum essentials in geography. It was the aim to make the questions and exercises a test on materials worth while in geography, and taken in this sense they would merely be a test on the minimum essentials.

Questions and Exercises of "Step P" of the Scale

79. *Name two large rivers of South America.*
80. *What two important products are brought to us from Brazil?*
88. *How can you get from New York to London, and in what direction would you go?*
89. *How can steamboats go from New York to San Francisco by the shortest route?*
100. *Name the chief occupation of the people of Australia.*
105. *Give two reasons why mountainous regions are not good for farming.*
28. *How can we tell how big a country is by studying a map?*
10. *How long does it take the earth to go around the sun?*
67. Give the principal reason why such dense forests grow along the Amazon.
70. Which part of the United States is most important for manufacturing, and which for agriculture?
74. Where may snow be found in the hot belt, near the equator?
77. Why is there so little rainfall in the Great Basin of the United States?
78. Name one way in which the Panama Canal will be an advantage to the United States in its trade with South America.

81. DURING WHAT MONTHS DOES ARGENTINA HAVE WINTER?
82. IN WHAT INDUSTRY OR KIND OF WORK ARE MOST OF THE PEOPLE OF ENGLAND ENGAGED?
31. WHY DO SO FEW PEOPLE LIVE IN DESERTS?

According to the scale an average fourth grade pupil ought to make 34% on the questions and exercises of this step or any part of it. A fifth grade pupil ought to make 50%, a sixth grade pupil 58%, and a seventh or eighth grade pupil 73%.

In the scale, the questions and exercises in italics are the ones which test the memory, and the ones in small capitals are thought-provoking. The first eight questions and exercises in "Step P" belong to the former, and the last eight to the latter.

In all there are from fifteen to twenty tests of ten exercises each in this scale. About half of these may be made memory tests if desired and the others tests on rational geography.

SOME USES OF THE SCALE

There are several uses that can be made of a scale of this kind, some of which are given below:—

1. *To measure a pupils ability in geography for his promotion or classification.* If he answers correctly 73% of the exercises in "Step P" he is ready for the eighth grade. If he answers 58% correctly, he may be promoted to the seventh grade; 50%, to the sixth grade; 34%, to the fifth grade. In like manner each of the other steps of the scale may be used to determine the grade to which a pupil belongs.

2. *To measure the ability of a class as a whole for comparison with the standard given in the scale.* On a test taken from the list of questions and exercises in "Step O", the average score of a seventh grade at the close of the year should be 66%; that of a sixth grade, 50%; that of a fifth grade, 42%; and that of a fourth grade, 27%. Likewise each step in the scale may be used for comparing the ability of a class with the standard.

3. *To compare the progress of a year's work in geography for comparison with the normal progress shown by the scale.* During the year, a fifth grade class should advance two steps in terms of the scale; a sixth grade class, one step; and a seventh grade class, two steps.

4. *To measure the balance between the different phases of geography work.* The questions and exercises of the scale cover all phases of subject-matter treated in recent text-books on geography. By studying the nature of the exercises missed by her pupils in the various tests, the teacher may discover to what phase of work she should give more attention. Especially is this

true in the arrangement of the data of the scale for the purpose of testing the balance between memory work and thought work.

5. *To measure the merit of different methods of instruction and of school organization.* It furnishes a scientific basis for determining the value of such work as map drawing, laboratory exercises, field work, problem assignment, use of stereoscopes, lanterns, etc. Of all the elementary school subjects, geography is undoubtedly the best for testing the value of departmental instruction and supervised study. It may also be used to study individual differences among pupils of the same school grade, and the overlapping of grades. For all such experimental work this scale gives new and larger opportunities.*

*EDITOR'S NOTE. Copies of the Hahn-Lackey Geography scale with its list of graded questions may be obtained by sending 7 cents to E. E. Lackey, Normal School, Wayne, Nebr.

GEOGRAPHY IN THE JUNIOR HIGH SCHOOL*

BY JAMES H. SMITH
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AT THE 1916 meeting of the Central Association of Science and Mathematics Teachers a committee report was given upon "Earth Science in the Reorganized (Junior-Senior) High School." This report set forth a tentative course of geography and related sciences, running from the seventh to the twelfth grades inclusive.[1] Since that report was given conditions in our country and in the world have changed seriously. We may fairly raise the question whether these changes demand that our proposed course in geography be maintained, altered, or entirely abandoned. At this time certainly no one would argue for a place in our schools for any subject that is not vitally connected with the lives of the people.

The Junior High School movement is making rapid progress in the schools of our country. Its present status is perhaps best set forth by Aubrey A. Douglass in Part III of the Fifteenth Year Book of the National Society for the Study of Education. In this we find that already 136 cities and towns in 38 states have these schools "in operation,"[2] while many other cities and towns have them partly organized or have plans for their establishment in the near future.

1—Proceedings of the Sixteenth meeting of Central Association of Science and Mathematics Teachers, pp. 127-128.

2—Fifteenth Year Book National Society for the Study of Education, pp. 140-5.

*Read at the Columbus, Ohio, meeting of Central Association of Science and Mathematics Teachers.

Selecting seventy-five of the best of the Junior High Schools a table is given showing subjects offered. As to Geography we find the following:

7th grade geography required in 51 schools
7th grade geography elective in 3 schools.
8th grade geography required in 17 schools.
8th grade geography elective in 1 school.
9th grade geography required in 1 school.
9th grade geography elective in 1 school.

Here we see a conspicuous lack of continuous, required geography. Practically all schools require a year of geography in either the seventh or eighth grade, and stop at that. Nor do they require other sciences in these three grades. Only forty-two schools require any other science, and these forty-two scatter it over the field, including general science, agriculture, physiology, botany, and zoology. Living in a scientific age these schools, recently reorganized and supposed to be progressive, postpone the introduction of the study of science until after the ninth grade. In discussing the "Principles underlying the Reorganization of the Several Subjects" geography is not listed. This means that either it is not to be given at all, or it is to be treated as at present in the grades of our schools. One ray of light penetrates this dismal situation. Sixteen schools require either in the seventh or eighth grade History and Geography; History, Civics and Geography; or Civics and Geography.

This implies that geography is to be given its application and its social significance. It is possible that in the social aspects of geography will be found its greatest field for usefulness, rather than its physical aspects which have been emphasized in the past.

In its report last year your committee said "There can be no defense of a high school course that leaves its graduates grossly ignorant of the countries, and peoples, and cities, and industries of the world with which their lives are vitally connected." Today this is true in a more imperative sense than ever before. Whether it be in conflict, or in statesmanship, or in commercial endeavor—the boys and girls who are now of early high school age more than any generation before them need an intimate knowledge of the earth and its inhabitants. Even the leaders among the administrators of our schools seem to be oblivious of this fact. As was well said in the discussion at our last meeting, the executives must be interested, teachers must be filled with enthusiasm and with an abiding interest, and the public in general must be convinced of the fundamental importance of this branch of education.

THE TIDES OF THE BAY OF FUNDY

THE tides of the Bay of Fundy are unequalled in height anywhere in the world, but they are not so high as they are more or less commonly supposed to be. The bay itself lies between New Brunswick and Nova Scotia; it is 145 miles long by 48 miles wide at the mouth, and converges toward the head like a funnel. The direction and shape of the Bay of Fundy is the chief factor in making these tides of exceptional range. The coast of Maine sweeps around to the northeast in a broad curve and terminates in the land-locked Bay of Fundy. The tidal wave comes from the southeast and is forced into the funnel-shaped bay. During its progress its velocity is always increasing. As it sweeps up the Bay of Fundy the water is piled up higher and higher, as the bay narrows until it reaches a height above mean low tide of 50.5 feet at the spring tide, and 37.4 feet at the neap.*

As the tide advances, a bore or crest of water, rushes swiftly up the inclined bed of mud. Sometimes this foaming bore is not over one's shoe tops; again if there is a strong wind from the south or southwest, it may rise to a height of six or seven feet.

After the bore has passed, the tide flows in like a silent but resistless river at the rate of three or four miles an hour. The water rises for six hours at the rate of about two inches a minute, and fills the mouths of the tributary streams from 10 to 30 feet deep. At the mouth of the St. John's river, in New Brunswick, there is a cataract where the river falls into the bay; but at high tide the water rises over the top, so that the falls are reversed and the water flows from the bay into the river. When the flood tide is changing to ebb, there are about fifteen minutes of calm when vessels may take advantage of the high water and go over the falls with perfect safety. On a smooth, slightly inclined shore boats may be carried up by the impetus of the tide without danger. At points on the Nova Scotia shore where there are tidal flats 12 miles broad exposed at low tide, ships can be run up on the flood tide and after the water retreats, they are left high and dry as if on a dry dock until the next flood, 12½ hours later.

Although the average height of the spring tide *above low water level* is 50 feet, there have been times when the tide was much higher. In 1869 at the time of the great Saxby storm the tide rose to 60 or 70 feet. The figures for the Saxby storm tides are often quoted for the normal height of the Fundy tides, but such tides

*Bowditch, "American Practical Navigation, 1914, p281.

occur only very rarely and are produced by a violent storm from the south. The following table shows a comparison of the Bay of Fundy tides with certain others.

Place	Range	
	Spring	Neap
Bermuda Island (about same as open sea)	4.0 feet	2.6 feet
New York Navy Yard	5.3 feet	3.4 feet
Portland Custom House	10.1 feet	7.3 feet
Boston Navy Yard	11.0 feet	8.1 feet
Burntcoat Head (Highest Tide in Bay of Fundy)	50.5 feet	37.4 feet

The extensive marshes around the Bay of Fundy are the direct effect of the tides. The marshes were first utilized by the Acadians who built stone and mud dikes to keep out the sea. In Nova Scotia and New Brunswick there were, as early as 1875, 120,000 acres of diked marshes, which are converted into fertile fields, especially adapted for growing hay.

F. W.

TEST QUESTIONS—ECONOMIC GEOGRAPHY OF THE U. S.

1. Three coal fields in the U. S. produce most of our coal; locate them definitely.

2. Five states in the Union are very large producers of petroleum; name them.

3. A major part of the cotton mills of the United States are in two rather limited sections of the country; what are they?

4. Only three states are very large producers of beet sugar; what are they?

5. Three-fourths of the copper mined in the United States comes from small areas in three states; name the states.

6. Four of the five leading shoe manufacturing cities are in one state; what state?

7. Most of the cane sugar produced in the United States comes from one state; what is it?

8. The forest regions of the United States may be grouped into five major belts; where are they?

9. There are seven cities of 100,000 or more people on the Great Lakes; name and locate them.

10. There are four such cities on the Mississippi River; name them.

11. California and Washington have three large cities each; name and locate them.

12. Six railroads extend from the Mississippi Valley to the Pacific Coast; name them.

13. One part of one state produces more than one-half of all the iron ore mined in the United States; what state? What part?

14. About half of the foreign commerce of the United States passes through one port; what is it?

15. One small part of one state produces substantially all of the hard (or anthracite) coal mined in the United States; locate it.

16. Only one river of the Mississippi system is very much used for navigation; what one is it?

17. Two states of the Union produce over 100,000,000 bu. of wheat each; name them.

18. We raise three crops each having in normal times a greater annual value than our wheat crop; what are they?

19. We produce only one-twentieth of the sugar that we consume; where do we buy most largely?

20. In times of peace, three countries buy nearly one-half of our exports. What are these countries?

21. About half of the ready-made clothing (both for men and women) manufactured in the United States is made in one state and very largely in one city; what state and city?

22. More than half of the manufactured goods made in the United States are made in five states; name them.

23. The United States has three cities of over one million population; what are they?

24. One state in the Union produces one mineral annually worth nearly as much as all the gold produced in the world; what is the state and the mineral?

Answers to Foregoing Questions

1. (a) The Appalachian field extending from western Pennsylvania to Alabama, (largest producer); (b) the anthracite field of northeastern Pennsylvania, producing practically all of the hard coal mined in the United States: (c) the eastern interior field, mainly in Illinois but extending into Indiana and Kentucky.

2. Oklahoma, California, Texas, Illinois, Louisiana.

3. Eastern Massachusetts and Rhode Island; Piedmont region of North Carolina, South Carolina, and Georgia.

4. Colorado, California, Michigan.
5. Arizona, Montana, Michigan.
6. Massachusetts, around Boston.
7. Louisiana.
8. (a) Northern pine belt extending from Maine westward to Minnesota, (b) Southern pine belt, along the coastal plain from New Jersey to Texas, (c) the central hardwood belt, the larger part of which has been cut over, (d) the Rocky Mountain belt, mainly pines, (e) the Pacific slope forests in which fir and cedar are dominant.
9. Buffalo, Cleveland, Toledo, Detroit, Milwaukee, Chicago, Toronto.
10. Minneapolis, St. Paul, St. Louis, New Orleans.
11. San Francisco, Los Angeles, Oakland, Seattle, Spokane, Tacoma.
12. Great Northern, Northern Pacific, Chicago, Milwaukee and St. Paul, Union Pacific, Santa Fe, Southern Pacific.
13. Northeastern Minnesota.
14. New York.
15. Northeastern Pennsylvania.
16. The Ohio.
17. North Dakota and Kansas.
18. Corn, hay, cotton.
19. Cuba, Hawaii, Java.
20. Great Britain, Germany, Canada.
21. New York City and State.
22. New York, Illinois, Pennsylvania, Massachusetts, Ohio.
23. New York, Chicago, Philadelphia.
24. Pennsylvania, coal.

MEETING OF KANSAS AND WASHINGTON COUNCILS

The following is a program of the Kansas Council held in Topeka, November 9th:

"Methods in Elementary Grades," .....JANE K. ATWOOD
"Socializing Geography in the Junior High School,"
.....H. E. CHANDLER, JUNCTION CITY
"The Climate of Kansas," .....S. D. FLORA, TOPEKA

The following officers were elected for the coming year:

President—Miss Jennie Williams, Emporia, Kan.
Vice President—Miss Georgia Stipp, Wichita, Kan.
Secretary—Miss Bessie Bixby, Lawrence, Kan.

The meeting of the Washington Council was held October 26th at Tacoma. The program consisted of "*Essentials in the Teaching of State Geography,*" E. J. Saunders, University of Washington. Newly elected officers were:

State Director—J. E. Buchanan, Cheney.
Sec'y. and Treas.—E. H. Golisch, Seattle.

MEETING OF THE MARYLAND COUNCIL

The Maryland State Geography Council met in a sectional meeting with the State Teachers' Association on Sept. 27, at 2 p. m., in the Teachers' Training School in Baltimore. The Teachers' Training School had on exhibition a very interesting and instructive exhibit of the work of the school. There were nearly a thousand teachers present. The following program was given:

2:30—3:30: "*Short Talks on Personal Experience with Various Phases of Geography Teaching.*" Leader, Mrs. Nan Mildred Mosteller, Supervisor of Frederick Schools.

"*The Geography of the Intermediate Grades*"—Miss Margaret Duvall, Frederick County.

(a) Method of Approach.
(b) Project—Problem Method.
(c) Use of Text Book and Reference Book.
(d) Discussion.

"*The Geography of Grades 6 and 7*"—Miss Edna Schaffer, Frederick County.

(a) The Basis of Work in These Grades.
(b) How Problem Geography Has Motivated My Work.
(c) Relation of Geography to Other Work.
(d) Discussion.

Miss Edna M. Marshall of the Maryland State Normal School, Frostburg, Md., presided.

Ernest E. Race, Md. State Normal School, Director.

Correction

On page 150 of the December magazine, the distance from Boston to New York was given as 1,000 miles; it should have been 230 miles.

MASSACHUSETTS MEETING OF GEOGRAPHY TEACHERS

The Annual Meeting of the Massachusetts Branch of the National Council of Geography Teachers was held Saturday, November 17th, at the Boston Public Library. The lecture hall was filled with teachers, masters, and superintendents who are especially interested in promoting geography throughout the state. President L. O. Packard presided, and the program was as follows:

"Humanizing School Geography." By Professor Richard E. Dodge.

"Mature Geography in Europe and America and Its Relation to the Training of Teachers." By Professor Albert P. Brigham, Colgate University.

"The Significance of Geography in Elementary Education." By Wallace W. Atwood, Harvard University.

Professor Dodge made an exceedingly strong appeal for the emphasis of human geography with children, and Professor Brigham, through his knowledge of conditions in Europe, gave a most delightful address. Reports were received from the Secretary and Treasurer, and from Mr. Cushing as chairman of the committee on Geography in the Junior High Schools.

During the past year, through the activities of the local organization, geography has been represented on the programs of most meetings of the county teachers' associations. Special requests have come from distant parts of the state, and whenever possible speakers have been provided. A special meeting will be held on December 8th at Worcester, when Mr. Leonard O. Packard and Mr. Wallace W. Atwood will speak, and later in the year a similar meeting will be conducted at Lowell. The committee on Geography in the Junior High Schools has prepared a special report which is in course of publication, and the introduction of geography into the curriculum of the junior high schools in Boston has also been accomplished. The local organization is very much encouraged by the increased interest in geography which is felt throughout the State and throughout the world at this very critical time.

The membership in the local branch now numbers 182, an increase over last year of 62.

WALLACE W. ATWOOD, Secy.-Treas.

PROMINENT EDUCATORS OF SOUTHERN CALIFORNIA TALK ON GEOGRAPHY

A meeting of the Southern California branch of the National Council of Geography Teachers was held at the Los Angeles State Normal School on Saturday, November 24, 1917. The meeting was a success from three points of view—forcefulness of addresses, size of audience (upwards of 600), and number of teachers who enrolled as members of the council. Mr. James F. Chamberlain, head of the department of geography in the Los Angeles State Normal School, had charge of the meeting and was re-elected as director of the Southern California division. Miss Myrta L. McClellan was made secretary and treasurer.

The speakers were Dr. Ernest C. Moore, president of the Los Angeles State Normal School, and Dr. Albert Shiels, superintendent of the Los Angeles City Schools. Dr. Moore's subject was, *"The Place of Geography in Education."* Dr. Shiels talked on *"The Teaching of Geography in the Elementary School."*

In a short prefatory talk Mr. Chamberlain called attention to the changes that, due to the war, are taking place in the geography of the world, as well as in some of its correlates such as history and agriculture, and the obligation of the schools to adjust the teaching of geography to meet these changes. This means better qualifications of the geography teacher. Emphasis was placed upon the importance of appointing supervisors of geography in all the large cities of the United States that teachers might have the same kind of aid in this important subject as is given them in music and drawing, where supervision of untrained teachers has meant so much.

Dr. Moore made his audience feel that to live broadly and efficiently it is necessary to know the geography of the world. Geography must mean something more than the fulfilling of our little unrelated needs. Geography hitches up the whole world with general living conditions. It is fatal to lose the interrelation of great facts, the significance of important conditions. Our knowledge of geography must be comprehensive, not merely consist of that of one valley, one city, one state, one country. The integrity of any one political unit depends upon the knowledge of world conditions possessed by its inhabitants. We must know geography in order to determine what the United States must do today, and what it must do tomorrow. The Mexicans and Bolsheviki do not know what to do with their countries because they do not know their near or distant neighbors.

Dr. Shiel's talk was constructive throughout. He insists that

unless geography is taught from the view-point of the home of man a working knowledge of the subject cannot be given the children. Causal relations of conditions should be shown, yet judgment should be used as to how far it should be carried. For instance, what is good in the eighth grade might be foolishness in the third. But everywhere there should be enough opening up of a topic to make the child in the end think beyond it. As a final point Dr. Shiels emphasized the opportunity and the obligation of the geography teacher to teach sturdy patriotism, and at the same time give such an understanding of the peoples of the earth that there will grow up an appreciation among all nations of mutual help and interdependence.

RECENT PUBLICATIONS

A TEXTBOOK ON THE PRINCIPLES OF SCIENCE TEACHING. By George Ransome Twiss. The Macmillan Co., N. Y., 1917. xxvi+486 pp. $1.40.

This is the most valuable contribution to science teaching in secondary schools that has yet appeared in this country. Mr. Twiss has been for many years State High School Inspector in Ohio. His special interest is in science teaching, and his years of observation in the high schools have given him a most excellent basis upon which to construct his book. The volume is a model of care and thoroughness. Each of the high school sciences (Biology, Geography, Physics, Chemistry, and General Science) is treated with a degree of insight that is remarkable. One who reads the chapters on Geography feels that the author is surely a specialist in that field, so clearly does he analyze the situation in that study, and so sanely does he offer suggestions for its effective teaching. The same quality appears to characterize the chapters dealing with the other sciences. Moreover, the book is a most practical help in its suggestions concerning equipment, reference books, supplementary material, laboratories, museums, field work, etc.

The discussion of "General Science" and the cautions which are presented are to be commended to every teacher of that difficult subject.

THE PRINCIPLES OF AEROGRAPHY. By Alexander Mc. Adie. Rand McNally & Co., Chicago. xii+318 pp. 8vo. 51 ills, 59 charts and diagrams. 1917. $3.00.

Five years have elapsed since a comprehensive treatise on meteorology appeared in this country so that the time is ripe for

the appearance of this volume devoted to the more recent advances in the science of the atmosphere.

The scope of the book is somewhat wider than the average textbook on this subject. Its chapters: a brief history of meteorology; units and symbols; temperature scales; thermodynamics of the atmosphere; stratosphere and troposphere; the circulation of the atmosphere; the major circulations; the minor circulations; forecasting storms; the winds; the water vapor of the atmosphere; condensation, dust and microbes; atmospheric electricity; precipitation; floods and notable storms; frosts; solar influences, show the ground covered and the somewhat heterogeneous treatment. Some of the subjects are very briefly treated, and references to original authorities are often omitted so that students who wish to pursue any subject farther will often be nonplussed.

There is much history and description in the book, and the more technical matters are discussed in an interesting style so that the non-technical reader will find much to attract him. The illustrations are new and have been well chosen, and are very clearly reproduced. The metric system is used throughout, a great many technical words that have not yet gained wide use even amongst professional meteorologists are used, sometimes without sufficient explanation. The author allows his zeal as propagandist to run away with him not only in the choice of a long-disused synonym for meteorology in his title, but also in employing for measures of atmospheric pressure "megabar," "kilobar," etc., instead of the "bar." "millibar," etc., adopted by the Conference of Physicists in Paris in 1900, and in general use by meteorologists at the present time.

E. R. Miller.

BOOKS RECEIVED

"Bugle Calls of Liberty," by Paul Maye Paine. Iroquois Publishing Company, Syracuse, New York.

"Suggestions of Modern Science Concerning Education," by Herbert S. Jennings, John B. Watson, Adolf Meyer, William I. Thomas. Price $1.00. The Macmillan Company, N. Y. 1917.

"First Year Course in General Science," by Clara A. Pease. Charles E. Merrill Publishing Company, 1915. Price with Manual $1.28, without Manual $1.08, Manual alone 24 cents.

"Nixie Bunny in Far-Away Lands," by Joseph C. Sindelar. Beckley Cardy Publishing Company, Chicago, Ill., 1917. Price 45c.

"PLANT MATERIALS OF DECORATIVE GARDENING: THE WOODY PLANTS," by William Trelease, Urbana, Illinois. Published by the author, 1917.

THE RISE OF RUBBER PLANTATIONS

In cultivating rubber the Malay Peninsula and the Borneo territories have played a prominent part in one of the romances of modern commerce. The story of the introduction of the Hevea brasiliensis rubber tree into Malaya, of its long neglect, its gradual adoption by planters as a possible improvement on coffee, of the phenomenal rise in the price of the commodity followed by the "boom" of 1910, is one of the most interesting in recent economic history. Those planters who had already taken up rubber-planting before the boom arrived nearly all made fortunes, while there came a rush of others to take advantage of this new-found way to wealth. Coffee estates were hastily interplanted with rubber, cocoa-nut plantations were laid waste to provide space for the new product, while some hundreds of thousands of acres of jungle land were applied for and obtained from the government to be turned into rubber plantations. All through the Federated Malay States, more especially in Selangor; in the island of Singapore, in Province Wellesley, in Johor, in British North Borneo and Sarawak, to a limited extent even in Kedah and Kelantan, at that time not yet under British rule, estates were opened up. The area actually under rubber in all the territories under review, which in 1905 amounted to some 50,000 acres, was in 1912 over 400,000 acres, the land leased for ultimate planting being some 700,000 acres. This large area was comprised in upwards of 600 estates, the capital invested in which was not less than 30,000,000 pounds. [OXFORD SURVEY OF BRITISH EMPIRE.]

WEST INDIES OFFER LARGE FIELD FOR U. S. TRADE

MORE American goods were sold to the West Indies in 1916 than to the entire continent of South America, says a report issued by the Bureau of Foreign and Domestic Commerce, of the Department of Commerce. The West Indies, including Porto Rico, took $191,195,791 worth of goods made in the United States during that year, whereas the sum total of American shipments to South America was $177,628,611.

To impress upon the American manufacturers and exporters

the extreme importance of the West Indies trade the author of the report, Special Agent Garrard Harris, makes other interesting trade comparisons for 1916. Cuba alone purchased more merchandise than Argentine, Brazil, Bolivia, Ecuador, Uruguay, and Paraguay combined. China, he says, is rightly regarded as one of the best fields for commercial effort by American exporters, yet the great oriental Republic, with its 400,000,000 population, purchased only one-seventh the amount of American goods taken by the West Indies. As a matter of fact, the West Indies took considerably more than two-thirds as much of our goods as the whole continent of Asia and all the islands of the East Indies. They took more than two and one-half times as much as Australia, New Zealand, and the rest of British Oceania. They took four and one-half times as much as all Africa. In short, the West Indies are one of the very best markets for the products of American factories, fields, and mines.

The bureau's report, which is entitled "The West Indies as an Export Field," is in reality a handbook, and the first one of its size (nearly 400 pages) designed to meet the needs of American commercial interests. Its treatment of each country and colony is comprehensive, although the commercial point of view is never lost sight of. In the section devoted to Cuba, for instance, there is a brief description of the language, currency, weights and measures, postage, and the telephone, telegraph, and wireless systems. Then a short historical sketch, following which there are chapters entitled "Location and Area," "Physical Characteristics," "Sanitation and Health," and "Population and Distribution." Next in order comes a description of the different Provinces, with a sketch of the resources, industries, transportation facilities, etc., of each. The other chapters, and they are the meat of the report so far as the American manufacturer and trader are concerned, relate to such subjects as the recent commercial progress of the country, agricultural products, fibers, stock raising, forest resources, manufacturing industries, mineral resources, mineral waters and baths, labor and wages, rents and living expenses, government and education, courts and civil laws, trade-marks and patents, lands and titles, taxation, banks and banking, foreign trade, customs tariff, commercial travelers and their samples, and concluding the section there is a chapter entitled "Summary—Outlook for the Future." Sixty-nine pages are devoted to Cuba alone. The other countries are treated in the same thorough manner, although not, of course, at the same length.